

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number  
**WO 2005/044793 A2**

(51) International Patent Classification<sup>7</sup>: C07D

(21) International Application Number:  
PCT/US2004/035648

(22) International Filing Date: 27 October 2004 (27.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/516,164 31 October 2003 (31.10.2003) US  
60/560,518 8 April 2004 (08.04.2004) US

(71) Applicant (for all designated States except US): TAKEDA PHARMACEUTICAL COMPANY LIMITED [JP/JP]; 1-1, Doshomachi 4-chome, Chuo-ku, Osaka-shi, Osaka 541-0045 (JP).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GYORKOS, Albert,

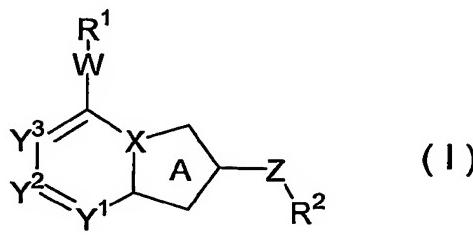
Charles [US/US]; 11795 Decatur Drive, Westminster, CO 80234 (US). CORRETTE, Christopher, Peter [US/US]; 13839 W. 66th Way, Arvada, CO 80004 (US). CHO, Suk, Young [US/US]; 1091 Button Rock Drive, Longmont, CO 80501 (US). TURNER, Timothy, Mark [US/US]; 1028 Morning Dove Drive, Longmont, CO 80501 (US). PRATT, Scott, Alan [US/US]; 11713 Victor Drive, Longmont, CO 80504 (US). ASO, Kazuyoshi [JP/JP]; 10-5-307, Kamihamuro 1-chome, Takatsuki-shi, Osaka 569-1044 (JP). KORI, Masakuni [JP/JP]; 15-7, Takenodai 5-chome, Nishi-ku, Kobe-shi, Hyogo 651-2274 (JP). GYOTEN, Michiyo [JP/JP]; 2727 Nelson Road, #H-207, Longmont, CO 80503 (JP).

(74) Agents: CHAO, Mark et al.; Takeda Pharmaceuticals North America, Inc., 475 Half-day Road, Lincolnshire, IL 60069 (US).

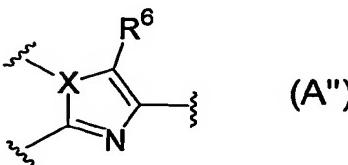
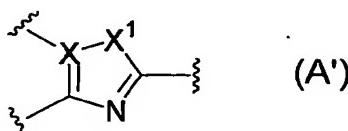
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

*[Continued on next page]*

(54) Title: NITROGEN-CONTAINING FUSED HETEROCYCLIC COMPOUNDS



(57) Abstract: There is provided a CRF receptor antagonist comprising a compound of the formula (I): wherein, ring A is a 5-membered ring represented by the formula (A'): wherein X is a carbon and X<sup>1</sup> is an oxygen, a sulfur or -NR<sup>5-</sup>, or formula (A''): wherein X is a nitrogen and R<sup>6</sup> is an optionally substituted hydrocarbyl, R<sup>1</sup> is an amino substituted by two optionally substituted hydrocarbyl groups, R<sup>2</sup> is an phenyl, Y<sup>1</sup> is CR<sup>3a</sup> or a nitrogen, Y<sup>2</sup> is CR<sup>3b</sup> or a nitrogen and Y<sup>3</sup> is CR<sup>3c</sup> or a nitrogen, provided that one or less of Y<sup>1</sup>, Y<sup>2</sup>, and Y<sup>3</sup> is nitrogen, W is a bond, -(CH<sub>2</sub>)<sub>n</sub>-, and Z is a bond, -NR<sup>4-</sup>, etc.; or a salt thereof or a prodrug thereof.



WO 2005/044793 A2



AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.